

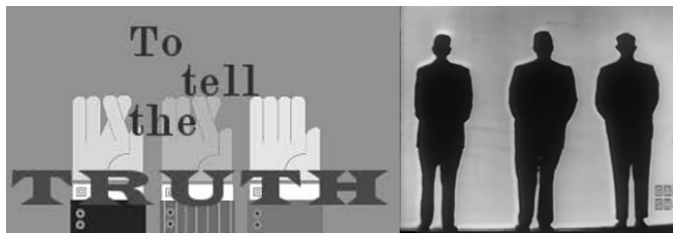
Targeting MISINFORMATION

<http://shipseducation.net/misinfo>
<http://shipseducation.net/expertise>

Consumers should be able to trust the consensus of the relevant scientific experts.

But who is an expert?

This pair of inquiry activities helps students reflect on the nature of expertise and the criteria for ascertaining expertise, from the position of being a non-expert (See NGSS Science & Engineering Practice #8: “assess the credibility, accuracy, and possible bias of each publication” [Vol. 2, p. 65].)



Game: “To Tell the Truth”

This popular 1960s gameshow was revived 2016. Panelists interviewed unknown contestants, all pretending to have performed the same noteworthy feat. So imagine, the spotlight falling in turn on three individuals who each claim: “I am a scientist.” “I am a scientist.” “I am a scientist.”

But: “two of these speakers are imposters. Only one is the real scientist. Can you determine who is telling the truth?”

Here is a sample:

- ▶ *Who can be trusted as a **credible scientist**?*
 - **Steve Milloy**, author of *Junk Science Judo: Self-Defense Against Health Scares & Scams*; adjunct scholar at the Cato Institute; and editor of the junkscience.com website, rated a “Hot Pick” by *Science* magazine; a frequent science commentator on radio and television
 - **James Inhofe**, 4-term Senator and former Chair of the Environment and Public Works Committee.
 - **Phil Jones**, former head of the Intergovernmental Panel on Climate Change, whose hacked e-mails revealed that he discussed suppressing the release of data and the “tricks” used in graphing long-term temperature changes
= What matters is *expertise*, not prestige, impressive-sounding titles or style.

- ☐ *Who can be trusted as an **expert** about climate change?*
 - **Fred Singer**, physicist, head of the Non-Intergovernmental Panel on Climate Change, fellow at the Marshall Institute; founder of the National Weather Satellite Service; and former deputy assistant administrator for the Environmental Protection Agency
 - **John Coleman**, co-founder of the Weather Channel, former TV weatherman, with 6 decades of experience in broadcasting
 - **Naomi Oreskes**, historian of science with background in geology and a former mining consultant

= What matters is *consensus*, not expertise alone.

- ☐ *Who can be trusted to speak for the **scientific consensus**?*
 - **John Christy**, professor of Atmospheric Science and Director of the Earth System Science Center at the University of Alabama Huntsville, and Alabama State Climatologist; a pioneer in satellite temperature detection and 1991 recipient of NASA's Exceptional Scientific Achievement Medal; who gave Congressional testimony on atmospheric temperature data and its implications on May 14, 2015
 - **Steve McIntyre**, former mining consultant and statistician, Editor of the ClimateAudit website, whose analysis revealed errors in compiling temperature data for the last 1,000 years
 - **Paul Huttner**, local radio weatherman, author of the "Updraft" blog on Minnesota Public Radio

= What matters is *honest reporting* of consensus, not the voice of individual experts with potential bias or conflicts of interest.

Review:

Within science the key questions are: what is the evidence? what is the argument? For the non-expert outsider, the questions shift to the expertise and integrity of the spokesperson:

Who can give credible (expert and honest) testimony on science?



Inquiry Activity: Who's an Expert?

This is an open-ended exercise for students to reflect on who they rely on for specialized information, and who they can trust (and why). In modern culture, knowledge is widely distributed among specialized experts — dentists, lawyers, auto mechanics, plumbers, tech repair staff, bridge welders, and scientists, too (all pictured above). How do we manage our *epistemic* trust?

ENGAGE

▣ [in small groups] *Identify a handful of occasions where you depend on others who know more than you do. Discuss how you know to trust the information they provide.*

Some examples might include:

- repairing your cell phone
- getting a confidential pregnancy test or STD consultation
- help with the science homework(!)
- where the good parties are this weekend

EXPLORE

▣ *Extend the problem more broadly. Who in our culture do we depend on for expertise? What exactly makes them an expert? Is science a form of expertise? [see list above, as samples]*

EXPLAIN

▣ *How do we know (generally) to trust an expert? What criteria would you use?*

[Here is an opportunity to collect quick one-word answers from every student.]

▣ *How might we apply these in a variety of contexts — as a citizen seeking scientific information, as a journalist, in military intelligence, in a grand jury or courtroom?*

Note: Help students distinguish the cases of assessing performance as a fellow expert versus being an “outsider” or non-expert.

One may supplement students responses, as needed, with invitations to consider: track record; credentials; licensing; documented experience; referrals; portfolio; awards or professional recognition.

ELABORATE

▣ *How is trust in someone's expertise different from other forms of trust (loyalty, morality, commitment)?*

▣ *What are the problems of applying these criteria for consumers interpreting science?*

EVALUATE

▣ Choose a contemporary scientific issue relevant to some social issue. Individually, find two expert sources you feel can be trusted, and identify two others that you regard as non-expert and non-trustworthy. Record your reasoning. Then, compare your results with others.